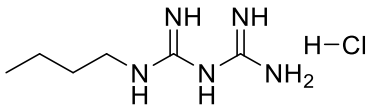
Product data sheet

MedKoo Cat#: 591104 Name: Buformin hydrochloride CAS#: 1190-53-0 (HCl) Chemical Formula: $C_6H_{16}ClN_5$ Exact Mass: 193.1094 Molecular Weight: 193.68	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:

Buformin (1-butylbiguanide) is an oral antidiabetic drug of the biguanide class, chemically related to metformin and phenformin. Buformin was marketed by German pharmaceutical company Grünenthal as Silubin. Buformin delays absorption of glucose from the gastrointestinal tract, increases insulin sensitivity and glucose uptake into cells, and inhibits synthesis of glucose by the liver. Buformin and the other biguanides are not hypoglycemic, but rather antihyperglycemic agents. They do not produce hypoglycemia; instead, they reduce basal and postprandial hyperglycemia in diabetics.[5] Biguanides may antagonize the action of glucagon, thus reducing fasting glucose levels.

2. CoA, QC data, SDS, and handling instruction

SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	125.0	645.39
PBS (pH 7.2)	1.0	5.16

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	5.16 mL	25.82 mL	51.63 mL
5 mM	1.03 mL	5.16 mL	10.33 mL
10 mM	0.52 mL	2.58 mL	5.16 mL
50 mM	0.10 mL	0.52 mL	1.03 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator

Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study

In vitro study

1. Ding Y, Lv S, Li G, Cui J, Chen Y. Buformin suppresses osteosarcoma via targeting AMPK signaling pathway. Open Life Sci. 2020 Jun 30;15(1):409-417. doi: 10.1515/biol-2020-0041. PMID: 33817229; PMCID: PMC7874575.
2. Chen L, Zhang T, Liu Q, Tang M, Yang Y, Wang Y, Qiu H, Yu J. Buformin increases radiosensitivity in cervical cancer cells via cell-cycle arrest and delayed DNA-damage repair. Exp Biol Med (Maywood). 2018 Oct;243(14):1133-1140. doi: 10.1177/1535370218813320. PMID: 32459508; PMCID: PMC6327368.

In vivo study

1. Parris AB, Zhao Q, Howard EW, Zhao M, Ma Z, Yang X. Buformin inhibits the stemness of erbB-2-overexpressing breast cancer cells and premalignant mammary tissues of MMTV-erbB-2 transgenic mice. J Exp Clin Cancer Res. 2017 Feb 13;36(1):28. doi: 10.1186/s13046-017-0498-0. PMID: 28193239; PMCID: PMC5307817.

7. Bioactivity

Product data sheet

Biological target:

Buformin hydrochloride (1-Butylbiguanide hydrochloride), a potent AMPK activator, acts as an orally active biguanide antidiabetic agent.

In vitro activity

According to the results of the CCK-8 assay, buformin exerted a significant dose-dependent suppressive effect on the growth of U-2 OS cells (Figure 1a, IC50 = 69.1 μM, P = 0.017, treated with buformin for 72 h). Moreover, this study then repeated this assay using 100 μM buformin and found that buformin exerted suppressive effects in a time-dependent manner (Figure 1b).

Reference: Open Life Sci. 2020 Jun 30;15(1):409-417. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7874575/

In vivo activity

To further test the buformin-associated inhibitory effects in vivo, this study used a syngeneic tumor model in MMTV-erbB-2 mice that were fed a buformin diet (1.2 g buformin/kg chow) for 12 days after inoculation with 78617 breast cancer cells. Mice fed the buformin diet exhibited significantly reduced tumor volumes and weights as compared to the control mice (Fig. 2).

Reference: J Exp Clin Cancer Res. 2017; 36: 28. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5307817/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.